



Clean Air for California Communities



California Environmental Protection Agency
California Air Resources Board
2020 L Street
Sacramento, California
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Focusing on California's Communities



It is our goal to ensure that all individuals in California, especially the children and elderly, can live, work and play in a healthful environment -- free from harmful exposure to air pollution.



The Air Resources Board (ARB) is advancing a new agenda to ensure that all California communities have clean, healthful air -- by addressing not only the regional smog that hangs over our cities but also the nearby air toxic pollution that is generated within our communities. It is our goal to ensure that all individuals in California, especially the children and elderly, can live, work and play in a healthful environment -- free from harmful exposure to air pollution. To achieve this ambitious goal, we have developed a new Community Health Program and placed new emphasis on community health issues in our existing programs. Our new program covers three areas, each of which is critical to reaching our goal. These three areas are:

- o Identifying Air Pollution's Health Effects*
- o Assessing Public Health Risks in California's Communities*
- o Reducing Public Health Risks*

The ARB's health research program continues to advance our ability to identify and understand air pollution's health effects. California's communities have a diversity of sensitive populations, and the health research program is increasing our understanding of the health effects of air pollution on those populations, including children, asthmatics, those with heart and lung disease, elderly, and other groups that may have special sensitivity to air pollution.

Assessing public health risks in individual communities is a growing ARB effort with multiple objectives. We have initiated a Neighborhood Assessment Program, which will give us a better understanding of community or neighborhood exposures to the total mix of air toxics and other pollutants from all sources. We are assessing the "cumulative impact" of air pollution on our communities. Work is already underway in the Barrio Logan community of San Diego. This work has proven to be a successful partnership of government and community leaders, with a common goal of understanding and improving the air that the community residents breathe. In addition to neighborhood assessments, we have



special studies underway focused on children, through the newly formed Children's Environmental Health Program. We are also improving existing technical assessment tools for conducting these studies at the community level. The knowledge gained from these neighborhood studies will help us better support our programs to reduce public health risk. We also expect this information to help citizens better understand issues associated with toxic exposures and make "clean air choices" to minimize their individual risk by their choice of activities and consumer products.

Finally, the ARB is beginning new efforts to reduce community exposures to air toxics. The cornerstone of these efforts is the proposed plan to reduce the health risks from exposure to diesel particulate matter -- estimated to contribute about 70 percent of the statewide ambient air cancer risk of those pollutants identified by the ARB as toxic. Reducing exposure from diesel particulate matter is the ARB's highest priority in reducing public health risk in all communities. Complementing this effort, the ARB will continue to develop risk reduction strategies for individual sources of air toxics. As part of the new Community Health Program, the ARB will, for the first time, address strategies to reduce the cumulative effects of exposure from multiple sources of air toxics. All of these efforts will be done through a public process that includes involvement from the community, regulatory agencies, and business and environmental leaders.

The ARB has led the way in reducing public health risks by identifying and reducing many air toxics through its comprehensive statewide Toxic Air Contaminant Program. The Toxic Air Contaminant Program has reduced emissions from motor vehicles, fuels, consumer products, and other sources of air toxics as well as smog-forming emissions statewide. The new Community Health Program agenda will continue this tradition of leadership by advancing our efforts to provide "Clean Air for California Communities".



Identifying Air Pollution's Health Effects

The ARB's health research program is continuing to help us better understand the link between air pollution and public health problems. The ARB is conducting a number of health studies that focus on children, elderly, and other especially sensitive or vulnerable populations. These studies are improving our knowledge about the health effects of multi-year exposures to urban air pollution. This information is important because it helps us better understand links between air pollution and the health of some of our most vulnerable groups, the young and the elderly. ARB studies are also investigating the health effects of multiple pollutants, children's asthma, and the effects of air pollution on those with heart disease.

Health Effects Research

Children's Health Study

Vulnerable Populations

- o Childhood Asthma Study*
- o Elderly with Heart Disease*
- o Other Sensitive Groups*

Review of ARB Air Quality Standards from Children's Health Perspective

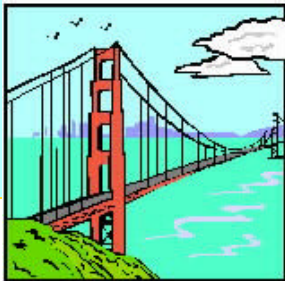
Children's Health Study

The ARB Children's Health Study is designed to assess the health effects of long-term exposure of children to southern California's mix of air pollutants. This study includes 5,000 children in 12 communities that have been assessed annually for up to eight years. The study focuses on the impact of air pollution on breathing ability and lung disease. Initial findings indicate a correlation between poor air quality and reduced lung function. Slower lung growth also appears to be associated with exposure to particulate matter, nitrogen dioxide, and acid vapor. In communities with high ozone levels, lower lung capacity was seen in boys spending lots of time outdoors and in girls with asthma. The study will continue through 2002.

Childhood Asthma Study

This ARB study, about to begin in Fresno, will focus on childhood asthma and how air pollution exposures impact the progression and severity of

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asthma in children. The overall goal is to determine the effects of particulate matter air pollution in combination with other pollutants, on asthmatic children. The study addresses the concern that repeated short-term responses to air pollution may worsen this disease over time.

Particulate Air Pollution Study of the Elderly

The ARB has funded a study to look at how short- and long-term exposure to particulate matter may affect the development and progression of cardiovascular disease. The study group consists of 4,000 men and women, most of them elderly. The elderly appear to be especially impacted by particulate matter. The group has been followed as part of a federally funded effort since 1990. This study examines health impacts not previously considered. The first results are expected to be available in early 2001.

New Focus on Children's Health (Senate Bill 25)

The ARB, in conjunction with the Office of Environmental Health Hazard Assessment (OEHHHA), is reviewing our existing State air quality standards, pursuant to Senate Bill 25, the Children's Environmental Health Program, to determine whether they protect infants and children with an adequate margin of safety. Standards found by the ARB to be inadequate, based on this review, will be revised in priority order. This process will include peer review and consideration of public comments.

As part of Senate Bill 25, OEHHHA will also initiate an ongoing process to evaluate the impact of specific air toxics on children's health. Based on the results of these studies, the ARB must implement appropriate control measures.

Assessing Public Health Risks in California's Communities

Unlike the traditional approach of focusing on a single pollutant or single air pollution source, the ARB's Community Health Program focuses on the total mix of all pollutants we breathe and the sources of these pollutants. This approach is often referred to as "cumulative exposure".

The ARB's Community Health Program builds on California's long-standing air toxics right-to-know program. Over the past 12 years, statewide air toxics data on individual industrial sources has been collected, the public notified of potentially high risks, and risk reduction plans developed for those sources that pose the highest risks to the public. Now the ARB is addressing the broader issue of cumulative exposure from all sources through a number of activities. One aspect of the Program now underway is to consolidate air toxics emissions and monitoring data by region, to use modeling tools and other analytical techniques to take a preliminary look at health risks in the community, and to make this information easily accessible to the public.



Equally important is the effort to develop more sophisticated technical tools for performing assessments on a neighborhood scale. This effort is part of the ARB's Neighborhood Assessment Program, which is a key component of our overall community health program. The neighborhood program will include monitoring of the air in neighborhoods, so that we can evaluate exposures to air toxics and other pollutants. Cumulative air exposures in the neighborhoods studied will be compared to those in other neighborhoods and to average regional exposures. These techniques help us detect any differences in exposure among neighborhoods and will aid in making progress on reducing health risks in all California communities.

At the request of the local community, the ARB initiated a 12-month monitoring and evaluation study in the Barrio Logan and Logan Heights neighborhoods of San Diego in October 1999. This pilot effort is serving as the foundation for ARB's air toxics community health program. We are expanding our monitoring efforts at neighborhood sites that may be impacted by toxic emissions from nearby sources as well as by overall regional air toxics emissions. Efforts such as this will supplement our existing statewide air toxics monitoring network, which was designed for regional rather than neighborhood assessments.

Neighborhood Assessment Program

The ARB is developing guidelines for evaluating air pollution impacts at the neighborhood level for all air pollutants. The guidelines will include technical tools for assessing cumulative exposure and health risks that can



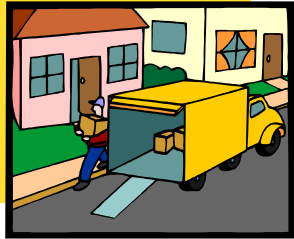
be used statewide. These tools will enable us to compare exposures between communities within a region and statewide. These tools will also allow the ARB to identify sources of air emissions and, using mathematical models, estimate exposure to air pollutants and the associated risk with those exposures. The guidelines and technical tools will help provide residents and local decision-makers with better information on neighborhood exposure and health risks. Risk reduction strategies will be developed at the State or local level depending upon the results of the assessments. Community leaders, local air districts, and other stakeholders will participate in the evaluation process.

New Community-Based Air Toxics Evaluations

Complementing the Neighborhood Assessment Program, ARB's new community-based air toxics evaluations will expand our ability to monitor and assess cumulative air toxic exposures. The goal is to understand the nature and sources of the air toxics exposures as well as the health impacts. Additional monitoring, emissions evaluations, and air quality modeling will be carried out at the community level to help fill gaps in current regional and statewide data. Cancer risk and other health impacts will be evaluated based on community exposure data. As appropriate, risk reduction strategies will be applied.

Children's Environmental Health (Senate Bill 25)

The ARB will conduct special monitoring focused on children's exposure to toxic and traditional pollutants. Monitoring will be expanded to locations near schools, day-care centers, and recreational facilities which may be impacted by sources such as industrial facilities or high traffic areas. By law, monitoring must be completed at six sites around the State by January 2003. However, the ARB intends to accelerate this effort. A combination of outdoor and indoor monitoring techniques will be used in order to provide the most comprehensive data possible on children's exposure to air pollution. We will also evaluate the ability of our current monitoring network to characterize the exposure of children and infants to air toxics and other pollutants.



Reduction of exposure from diesel exhaust is the ARB's highest priority in reducing public health risk in communities.

Indoor and Personal Exposure Programs

The ARB has funded many studies on indoor air pollution and personal exposure to air toxics. These studies have looked at activity patterns and breathing rates of children, and at air toxics and particulate matter exposure in residences. Of particular significance was a study that measured exposures to air pollutants along major roadways and in vehicles traveling on the roadways. Starting later this year, the ARB will begin studies to examine the environmental conditions within portable classrooms and children's exposures during school bus commutes.

Reducing Public Health Risks

The programs described in this paper continue and expand the ARB's successful pioneering efforts to reduce air emissions. The ARB continues to aggressively seek zero and near-zero emission technologies to reduce people's exposure to air pollution, and is working to further reduce public health risk through both statewide risk reduction efforts and community health efforts.

The success stories include a 60% reduction in statewide cancer risk from benzene exposure in outdoor air, due primarily to the introduction of cleaner burning vehicles and fuels. Control measures for consumer products and many other sources have reduced both toxics and smog-forming emissions statewide.

Through the Toxic Air Contaminant Control Program, the ARB has developed nine air toxics control measures (ATCMs), affecting over 30,000 sources statewide and typically reducing facility emissions by 95% to 99.9%. Many of these ATCMs affect businesses like dry cleaners and gas stations, which, although small in size, may have profound impacts on community health.

The following discussion highlights a number of efforts underway to reduce the public's exposure to air pollutants. The successful implementation of these efforts is dependent upon close cooperation with all stakeholders, including the local air pollution control agencies, affected businesses, and environmental leaders. The ARB is committed to working closely with these stakeholders.



Diesel Risk Reduction

The ARB is now focusing its regulatory efforts on seeking ways to reduce public health risks from particulate matter in diesel exhaust produced by motor vehicles and industrial engines. We estimate 70% of the known statewide cancer risk from outdoor air toxics is due to diesel particulate matter. Diesel particulate matter is the single most significant source of air toxics risk and exposure in California communities.

Diesel Risk Reduction Strategies

- Clean up existing engines
- New engines Standards
- Cleaner diesel fuel
- Alternative fuels and electrification

The ARB has developed a proposed statewide plan to reduce the health risks from diesel particulate matter. The key elements of the plan are to clean up existing engines by up to 85% through engine retrofits; to adopt stringent new engine standards that will reduce diesel exhaust particulate matter by over 90%; and to lower the sulfur content of diesel fuel to protect new, and very effective, advanced technology emission control devices on diesel engines. The diesel risk reduction plan when fully implemented will significantly reduce emissions from diesel-fueled vehicles, old and new, and stationary engines burning diesel fuel. The ARB will consider the proposed plan for approval in Fall 2000.

In early 2000, the ARB adopted a public transit bus fleet rule and emission standards for new urban buses. The transit rule will reduce smog forming pollutants and diesel particulate by encouraging transit agencies to purchase or lease low-emission, alternative-fuel urban buses. The diesel risk reduction strategies include the use of alternative fuels for other centrally-fueled fleets. Another strategy being developed is the substitution of electric vehicles for diesel support equipment at airports. The ARB is pursuing agreements with airlines that would accelerate this reduction of diesel-fueled ground service equipment. The ARB is also working with the agricultural community to convert agricultural water pumps in the Central Valley to electricity. Funding for many of these activities is provided by the motor vehicle registration fees and incentive funds.

Educating the residents in a local community is an essential component of the community-based approach.



Other Statewide Control Measures

The ARB continues to pursue statewide control measures that impact communities. Recent efforts include eliminating the use of toxic chlorinated solvents in automotive cleaning and degreasing products used by about 25,000 automotive repair and maintenance and repair facilities typically located in communities settings across the State. The ARB also adopted a measure to reduce smog-forming emissions from consumer products by prohibiting the use of toxic solvents in aerosol adhesives and aerosol paints.

The ARB will soon consider two asbestos control measures. Asbestos occurs naturally in many soil and rock types in California, such as in serpentine rock. The first proposal would prohibit the use of asbestos-containing materials on unpaved roads. The second proposal will reduce exposure from asbestos quarries and construction-related activities in areas with naturally-occurring asbestos.

In addition, the ARB is now embarking upon a complete review of all our air toxics control measures to assess the need for revisions to further protect public health, particularly that of infants and children. Based on that review, the ARB, in coordination with the Office of Environmental Health Hazard Assessment, will develop appropriate new statewide toxic control measures.

Risk Reduction for Cumulative Impacts

As part of the Neighborhood Assessment Program, the ARB is coordinating a working group to evaluate approaches to incorporate cumulative assessments into future decision-making processes, as well as make recommendations on policy options for future consideration. Its purview will cover strategies feasible within the existing legal and regulatory framework as well as needed changes to the existing framework. The group includes representatives from community and environmental groups, industry, local air districts, and other agencies.



School Bus Program

Incentive programs are also an effective way to improve air quality. In the 2000-2001 State budget, Governor Davis provided \$50 million for a program to clean up school bus emissions. The program provides funds to school districts to purchase new lower emission school buses and to install particulate matter control devices on existing diesel buses. The program will reduce exposure of school-aged children to toxic diesel particulate matter, and will reduce emissions of smog-contributing oxides of nitrogen. An additional benefit is improved safety through the removal of older, potentially unsafe school buses.

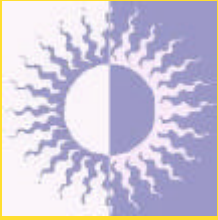
Carl Moyer Program

Another incentive program underway at the ARB is the Carl Moyer Program. This innovative program provides incentives to reduce emissions from heavy-duty diesel engines by replacing or rebuilding them with new cleaner technology engines. The incentives are grants that cover the incremental cost of cleaner on-road, off-road, marine, locomotive, and stationary engines. By encouraging voluntary emission reductions, the Carl Moyer Program accelerates the use of new technologies that reduce air emissions and public exposures. The 2000-2001 State budget includes \$50 million for this year's program.

Helping the Community Understand the Risks

Educating the residents in a local community is an essential component of the community-based approach. The neighborhood assessments will provide information needed to identify the primary sources of toxics exposure on a local scale. The ARB will then work with local air agencies and communities to provide information on how our statewide control strategies, especially diesel strategies, will reduce health risks at the community level.

We also plan to establish training programs to help residents understand local risks to minimize their own personal exposures. For example, making good "clean air choices" in the selection and use of household products can improve indoor air quality and reduce people's overall



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exposure. The ARB's indoor exposure program provides public education materials that focus on ways to reduce household exposures. The ARB also has underway a program to develop curricula for kindergarten through 12th grade on air pollution issues.

In addition, we are working in partnership with communities to encourage greater local consideration of public health decisions that could impact air quality. Community leaders who make decisions about zoning or the placement of new facilities such as schools, need to consider the potential health impacts of locating near sources of air toxics. Making informed decisions can help minimize people's exposure to air pollutants.

Compliance Assistance Program

Rules and regulations are only effective if sources meet the requirements. The ARB has a comprehensive Compliance Assistance Program that assists local businesses to help them comply with toxics and other control measures and to formulate alternative control strategies where additional reductions are needed. The ARB provides technical manuals, community information materials, and web-site information on community exposure to toxics and criteria pollutants. The Compliance Assistance Program develops publications that explain air pollution control requirements and promote better compliance.

ARB's Community Health Program Goal

The ARB is working to aggressively implement a Community Health Program whose goal is to ensure that all Californians, especially children, can live, work, and play in a healthful environment. We are continuing our efforts to identify the links between air pollution and health effects. We are assessing individual California communities to determine the cumulative effects of exposure to multiple pollutants. We are working to further reduce public health risks for Californians. We are working with communities to provide better information on community health concerns and developing strategies for reducing public health risks. This Community Health agenda continues the ARB's tradition of leadership by advancing our efforts to provide "Clean Air for California Communities".